

### REMARKS

Claims 1-28 and 30 are pending in this application. Claim 29 was previously canceled. Claim 6 is canceled herein. Thus, Claims 1-5, 7-28 and 30 are under consideration.

Claim 1 is amended to include the elements of Claim 6. Claim 31 is newly added. No new matter is added by these amendments. Support for the amendments is found throughout the as-filed specification and original claims.

#### **I. 35 U.S.C. § 112**

In the Office Action, Claims 2 and 3 were rejected under 35 USC 112 as allegedly lacking enablement. For the rejection of claims 2 and 3 under 35 USC 112, the Office Action alleges that “except for erythrocytes and leukocytes, applicant has not enabled one of ordinary skill in the art to extend the claimed process to any of the other identified cells of these claims.” Page 2; paragraph 3 of the Office Action. The Office Action further alleges the difference in size between red and white blood cells is necessary for the claimed invention to operate.

Applicants respectfully note these allegations are based on a misreading of the elements of Claim 2 and 3. Claims 2 and 3 specify that one of the cell types is selected from the recited group, not that all cells are of one particular cell type. Instead, for example, at least one cell type could be two cell types, such as bacterial and algae cells, which have different sizes.

In addition, the specification notes that cell size is not the only differentiator. The claimed method may be “suitable for separating cells on the basis of charge and or size.” Page 4; line 2 of the present application. For instance, the same cell type could have different characteristics that can be separated based on charge or size. “In one preferred embodiment, the sample contains at least two cell populations. The cell types can be derived from the same cell species but having different characteristics such as cell surface modifications for example, or can be different cell types.” Page 3; lines 20-23 of the present application. Thus, even with cells of the same size, their response based on charge could allow them to be separated. Applicants

respectfully request, therefore, that the rejection under 35 USC 112 be reconsidered and withdrawn.

## **II. 35 U.S.C. § 103(a) Egen in view of O'Farrell**

Claims 1-10, 12, 14, 15, 18-28 and 30 were rejected under 35 USC 103(a) over U.S. Pats. Nos. 5,336,387 to Egen et al. ("Egen") and 4,323,439 to O'Farrell ("O'Farrell").

Independent Claim 1 has been amended to recite the elements of Claim 6, namely that "substantially all transbarrier migration of a desired cell type occurs upon the application of the electric potential." Claim 6 has been cancelled.

Egen discloses an electrophoretic separator 10 including an array of sub-compartments 12 with two electrode compartments 30, 32 at ends of the array, as shown in Figure 1. Each of the sub-compartments includes membranes 17 that define narrow channels 16 therebetween, as shown in Figures 2-4 of Egen. Egen discloses use of counter flow against the direction of electrophoresis for separating species. "[T]here is provided a counter-flow gradient which counteracts the electrophoretic migration of the ions to be separated. The counter-flow gradient, as distinguished from the uniform counter-flow employed by O'Farrell, non-uniformly slows migration by slowing faster species more than the slower species." Col. 11; lines 50-56 of Egen. Egen also discloses separation of infected and healthy cells. Col. 17, ll. 19-21.

The Office Action admits that it is "unclear from Egen whether the primary sample flow from compartment 5 towards compartments 6-9 is due to electrophoresis or due to the counter flow." Page 4; paragraph 7 of the Office Action. However, the Office Action still alleged that some movement was due to electric potential: "Table 5 shows that some of the sheep red blood cells that started in chamber 5 ended up in chamber 4 indicating that for some of the sheep red blood cells, the electric field would have been a more powerful sample motive means than the counter flow (i.e., these samples moved against the counter flow)." *Id.*

Although not expressly stated in the Office Action, the alleged teaching by Egen of the motivating force for movement of the cells exceeding the counter flow force relies on inherency because Egan contains no express disclosure of the electric field being stronger than the counter

flow. For an inherency argument to hold, the inherent teaching *must necessarily be true* based on the disclosed results in Egen.

Assuming *arguendo* that only two forces, the counter flow and the electric field, act on the sheep cells in Egen, the electric field force only needs to be slightly higher than the counter flow force on some of the cells in order to effect the disclosed movement of the sheep cells. Thus, the electric field is exerting a force that is only, as cited in the Office Action, “more powerful” than the counter flow. The electric field force could be only slightly greater – and need not necessarily be substantially greater or more powerful – than the counter flow. In addition, as noted in the Office Action, the electric field is more powerful only for some of the sheep red blood cells. Thus, Egen fails to disclose or suggest “substantially all” of the migration occurring upon the application of the electric potential, as recited by amended Claim 1.

O’Farrell was relied upon as a supplementary teaching to Egen that the electrophoretic flow is stronger than the counter flow. Egen, however, distinguishes O’Farrell as disclosing a uniform counter flow and not a counter-flow gradient. Col. 11; lines 50-56 of Egen. One of ordinary skill in the art, therefore, would not be motivated to combine Egen, which uses a counter-flow gradient, and O’Farrell. Even if such a combination were (erroneously) made, the uniform counter flow of O’Farrell would still only need to be slightly overcome by the electric field to effect movement and thus not provide substantially all of the migration of the desired cell type.

### **III. 35 U.S.C. § 103(a) Prince in view of Egen, Sammons, Ivory or Vingh**

In addition, Claims 1-28 and 30 were rejected under 35 U.S.C. 103(a) over U.S. Pat. No. 6,491,819 to Prince et al. (“Prince”) in combination with Egen, U.S. Pat. Nos. 5,906,724 to Sammons et al. (“Sammons”); 5,071,536 to Ivory (“Ivory”) or U.S. Pat. App. No. 2002/0043465 to Vingh et al. (“Vingh”).

With respect to the rejection of Claim 1 over Prince in view of Egen, Sammons, Ivory or Vingh, Prince relies entirely on flow and not on an electric field to cause cell movement. Thus, combining Egen and Prince would still fail to disclose or suggest Claim 1. Nothing could be

found in Sammons, Ivory or Vingh that discloses or suggests, alone or in combination with Egen and/or Prince, application of an electric potential to induce substantially all of the transbarrier migration of a desired cell type. As remaining Claims 2-5, 7-28 and 30 depend from and include all of the elements of Claim 1, these claims are non-obvious for the same reasons. Applicants request reconsideration and withdrawal of the rejection.

New Claim 31 depends from, and further patentably distinguishes, Claim 1 and should therefore also be allowable over the cited references.

#### **IV. Conclusions**

In view of the amendments and arguments herein, Applicant respectfully requests allowance of all claims.

It is believed that all issues raised by the Examiner have been addressed. However, the absence of a reply to a specific rejection, issue, or comment does not signify agreement with or concession of that rejection, issue, or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

Fees in the amount of \$245.00 for a two-month extension of time for a small entity are being paid concurrently herewith on the Electronic Filing System by way of Electronic Funds Transfer authorization. Please apply any other charges or credits to Deposit Account 50-5226.

Applicant : Dennis Rylatt et al.  
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Respectfully submitted,

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/Gregory J. Carlin/  
Gregory J. Carlin  
Reg. No. 45,607

Customer Number 96039

Telephone: (404) 645-7700  
Facsimile: (404) 645-7707